MEL-001 – Science Laboratories Infrastructure Project, Various Locations

1. Significant Changes

N/A

2. Design, Construction, and D&D Schedule

See subproject details.

3. Baseline and Validation Status

See subproject details.

4. Project Description, Justification and Scope

MEL-001 subprojects are typical conventional construction and as such can be engineered, designed, and ready for construction contract award within one fiscal year, or in the following fiscal year. Accordingly, these subprojects are submitted with both Project Engineering and Design (PED) and construction funding identified. In most cases these subprojects proceed (after normal reviews and approvals) directly from design into construction with no delay. DOE's December 2000 Report to Congress "The U.S. DOE Implementation Procedures for the Use of External Independent Reviews and Project Engineering and Design Funds" allows this approach under the Section "Simplified Process for a Design-Procure-Build or Design-Build Project", pages 15 to 18. The full report can be found at the following web site: http://www.sc.doe.gov/sc-80/sc-82/documents/EIR-PED.pdf.

This project funds two types of subprojects:

- Subprojects that renovate or replace inefficient and unreliable general purpose facilities (GPF) including general use, service, and user support facilities such as administrative space, cafeterias, utility systems, and roads; and
- Subprojects to correct Environment, Safety, and Health (ES&H) deficiencies including deteriorated steam lines, environmental insult, fire safety improvements, sanitary system upgrades, and electrical system replacements.

They are grouped by these categories below:

General Purpose Facilities Projects:

a. Subproject 27—Research Support Building, Phase I, Brookhaven National Laboratory (BNL)

TEC	Prev.	FY 2006	FY 2007	FY 2008	Outyear	Construction Start/ Completion Dates
18,200	14,554[a]	3,646	—	—	—	2Q 2005–3Q 2007

This 65,000 sq. ft. facility is intended to consolidate Staff Services, Public Affairs, Human Resources, Credit Union, Library, and other support functions in a central quadrangle to provide staff and visiting scientists with convenient and efficient support. This facility, the first of four phases in the BNL Master Revitalization Plan, will include a lobby with a visitor information center to assist visiting scientists, and a coordinated office layout of related support services. After

[a] Title I and Title II Design funding of $1,679,000 provided under PED Project No. 03-SC-001.

completion of this subproject, 16,400 sq. ft. of World War II era structures will be torn down. Based on total life-cycle costs, productivity gains, avoided energy and maintenance costs, the Research Support Building will provide a return on investment of 10% and a simple payback of 8.4 years.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	18,200	70	—	18,270	18,200	—
FY 2006	18,200	70	—	18,270	18,200	—
FY 2007	18,200	70	—	18,270	18,200	—

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—1Q FY 2001
- Critical Decision-1: Approve Alternative Selection and Cost Range—1Q FY 2003
- External Independent Review Final Report—3Q FY 2004
- Critical Decision-2: Approve Performance Baseline—3Q FY 2004
- Critical Decision-3: Approve Start of Construction—1Q FY 2005
- Critical Decision-4: Approve Start of Operations—3Q FY 2007

b. Subproject 28—Building 77 Rehabilitation of Structures and Systems, Phase II, Lawrence Berkeley National Laboratory (LBNL)

TEC	Prev.	FY 2006	FY 2007	FY 2008	Outyear	Construction Start/ Completion Dates
13,360	9,580[a]	3,780	—	—	—	2Q 2007–1Q 2010

This subproject will provide for rehabilitation to correct mechanical, electrical, and architectural deficiencies in Building 77 (a 39 year old, 68,000 sq. ft. high-bay industrial facility). This building houses machine shop and assembly operations in which production of highly sophisticated research components for a variety of DOE research projects is performed. Current work includes precision machining, fabrication and assembly of components for the Advanced Light Source, the Dual-Axis Radiographic Hydrodynamic Test Facility (DAHRT) project, the Spallation Neutron Source, and the Argonne Tandem Linac Accelerator System (ATLAS) Detector. Infrastructure systems installed by this subproject will include heating ventilation and air conditioning (HVAC), power distribution, lighting, and noise absorption materials. The improvements are necessary to satisfy urgent demands for high levels of cleanliness, temperature and humidity control, and Occupational Safety and Health Administration (OSHA) and reliability requirements. The preliminary baseline for this subproject included work scope, including rehabilitation of Building 77a, that was not included in the final performance baseline. This is the second of two subprojects; the first subproject, funded in FY 1999

[a] Title I and Title II Design Funding of $1,402,000 provided under PED Project no. 03-SC-001.

and completed in FY 2002, corrected structural deficiencies in Building 77.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	13,360	135	—	13,495	13,360	—
FY 2006	13,360	135	—	13,495	13,360	—
FY 2007	13,360	135	—	13,495	13,360	—

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—1Q FY 2001
- Critical Decision-1: Approve Alternative Selection and Cost Range—1Q FY 2003
- External Independent Review Final Report—4Q FY 2006
- Critical Decision-2: Approve Performance Baseline—4Q FY 2006
- Critical Decision-3: Approve Start of Construction—2Q FY 2007
- Critical Decision-4: Approve Start of Operations—1Q FY 2010

c. Subproject 49—Building Electrical Services Upgrade—Phase II, Argonne National Laboratory (ANL)

TEC	FY 2006	FY 2007	FY 2008	Outyear	Construction Start/ Completion Dates
17,000	—	3,000[a]	6,000	8,000	4Q 2008–4Q 2011

This subproject will upgrade critical portions of the electrical power distribution systems within multiple research buildings (18) and their support facilities (5), at ANL. The distribution system transfer and feeder switches, area loop switches, overhead lines, panel-boards, transformers, switches, controls, and 480V switchgear/bus ducts will be upgraded to current safety standards, improving systems reliability and performance, and reducing facility maintenance and repair costs.

The identified existing electrical distribution systems are approximately 30 to 40 years old, do not meet current environmental, safety and health standards, are of poor reliability, and are not adequate to fulfill the Laboratory's current missions.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

[a] Title 1 and Title II design funding of $1,250,000 is provided under PED project no. 07-SC-0403.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	17,000	100	—	17,100	TBD	17,100

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—2Q FY 2002
- Critical Decision-1: Approve Alternative Selection and Cost Range—4Q FY 2006
- External Independent Review Final Report—3Q FY 2007
- Critical Decision-2: Approve Performance Baseline—4Q FY 2007
- Critical Decision-3: Approve Start of Construction—4Q FY 2008
- Critical Decision-4: Approve Start of Operations—4Q FY 2011

d. Subproject 50—Renovate Science Laboratories—Phase I, Brookhaven National Laboratory (BNL)

TEC	FY 2006	FY 2007	FY 2008	Outyears	Construction Start/ Completion Dates
18,000	—	4,600[a]	8,200	5,200	4Q 2008–4Q 2011

This project will upgrade and rehabilitate existing, obsolete, and unsuitable BNL Laboratory facilities into modern, efficient laboratory spaces. This project will revitalize and modernize laboratories in 5 buildings. The scope will include HVAC, electrical, lighting, plumbing, laboratory service, support and work areas, and architectural surface upgrades.

It will provide flexible layouts to meet current research needs and processes with modern communication capabilities, safety systems, utility systems, plumbing, lighting and electrical, laboratory cabinets, furniture, and finishes.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	18,000	70	—	18,070	TBD	18,070

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—2Q FY 2006
- Critical Decision-1: Approve Alternative Selection and Cost Range—2Q FY 2007
- External Independent Review Final Report—1Q FY 2008

[a] Title I and Title II Design funding of $3,158,000 is provided under PED Project no. 07-SC-0404.

- Critical Decision-2: Approve Performance Baseline—1Q FY 2008
- Critical Decision-3: Approve Start of Construction—4Q FY 2008
- Critical Decision-4: Approve Start of Operations—4Q FY 2011

e. Subproject 24—Modernization of Laboratory, Building 4500N, Wing 4, Oak Ridge National Laboratory (ORNL)

TEC	FY 2006	FY 2007	FY 2008	Outyear	Construction Start/ Completion Dates
18,000	—	7,071[a]	7,329	3,600	2Q 2008–4Q 2010

This proposed renovation of the 4500 complex is a critical component of ORNL's Modernization Initiative. Building 4500N is intended to serve as one of the strategic laboratory/office facilities for ORNL's future. This project is to modernize Wing 4 of Building 4500N, about 25% of the approximately 342,000 square feet contained in the existing structure. Wing 4 provides space for laboratories with the associated offices and the necessary support functions for the researchers. In general, the major structural members of the building will have minimal impact by this modernization. Only minor upgrades are required to the structural members of the building to meet seismic requirements. In general, the interior architectural features of the facility will be demolished. This includes all non-load-bearing interior walls, floor and ceiling finishes, furnishings, and specialties such as laboratory equipment, toilet room fixtures, and partitions. Mechanical and electrical equipment dedicated to servicing the modernized areas and any research related equipment will be removed. All associated service piping and ductwork will be removed.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	18,000	260	—	18,260	TBD	18,260

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—2Q FY 2002
- Critical Decision-1: Approve Alternative Selection and Cost Range—2Q FY 2007
- External Independent Review Final Report—4Q FY 2007
- Critical Decision-2: Approve Performance Baseline—4Q FY 2007
- Critical Decision-3A: Approve Start of Early Construction (Limited Demolition)—4Q FY 2007
- Critical Decision-3B Approve Start of Major Construction—2Q FY 2008
- Critical Decision-4 Approve Start of Operations—4Q FY 2010

[a] Title I and Title II Design funding of $2,000,000 is provided under PED Project no. 07-SC-0402.

Environment, Safety and Health Projects:

f. Subproject 36—Safety and Operational Reliability Improvements, Stanford Linear Accelerator Center (SLAC)

TEC	Prev.	FY 2006	FY 2007	FY 2008	Outyear	Construction Start/ Completion Dates
15,600	4,516[ab]	5,314	5,770	—	—	4Q 2006–1Q 2010

This subproject has two components:

- Underground Utility Upgrades – this component will replace deteriorated sections of hot water, chilled water, cooling tower water, storm drainage, sanitary sewer lines, natural gas, and fire protection. These upgrades are critical to the operation of the linear accelerator and the B-Factory rings which produce the essential collisions needed for the Parity Violation studies (one of the pillars of the current U.S. High Energy Physics program also carried out competitively at KEK in Japan). There have been several pipe failures over the last several years and the failure rate is expected to increase in these 35 year-old systems as they continue to age. When the pipes fail, research is slowed or halted until repairs are completed.
- Seismic Upgrades – this component will install seismic upgrades necessary to bring various building structures into compliance with the seismic standards of the Uniform Building Code. The seismic hazard in the Bay Area is high. Twelve facilities, i.e., those that will minimize the time required for the Laboratory to recover from an earthquake, will be retrofitted for a total of approximately 180,000 sq. ft.

  Payback is 11.2 years for the entire subproject.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	15,600	100	—	15,700	—	15,700
FY 2006	15,600	100	—	15,700	—	15,700
FY 2007	15,600	100	—	15,700	—	15,700

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—2Q FY 2002
- Critical Decision-1: Approve Alternative Selection and Cost Range—1Q FY 2004
- External Independent Review Final Report—3Q FY 2006
- Critical Decision-2: Approve Performance Baseline—2Q FY 2006

[a]Title I and Title II Design funding of $1,988,000 provided under PED Project No. 04-SC-001.
[b] Conference Report language redirected $4,500,000 from this subproject to the High Energy Physics (HEP) research program at SLAC.

- Critical Decision-3: Approve Start of Construction—4Q FY 2006
- Critical Decision-4: Approve Start of Operations—1Q FY 2010

g. Subproject 47—Seismic Safety Upgrade of Buildings, Phase I, Lawrence Berkeley National Laboratory (LBNL)

TEC	FY 2006	FY 2007	FY 2008	Outyears	Construction Start/ Completion Dates
17,000	—	7,500[a]	7,000	2,500	2Q 2008–4Q 2010

The proposed Seismic and Structural Safety Upgrades of Buildings, Phase I, project will correct existing structural deficiencies in LBNL Buildings 50 and 74, enhancing the safety of over 600 occupants of the seismically deficient buildings. Each of these buildings has been assigned a "Poor" seismic performance rating per the University of California Seismic Safety rating system. A "Poor" seismic performance rating applies to buildings and other structures whose performance during a major seismic disturbance is anticipated to result in significant structural and non-structural damage and/or falling hazards that would represent appreciable life safety hazards. Proposed upgrades vary by building and include: column reinforcement, new tube bracing, connection and anchorage upgrades, reinforcing interior shear walls, supplemental vertical supports, gap enlargement between structures, new footings, and upgrades to structural exterior walls.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.

Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	17,000	325	—	17,325	TBD	17,325

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—3Q FY 2005
- Critical Decision-1: Approve Alternative Selection and Cost Range—1Q FY 2007
- External Independent Review Final Report—3Q FY 2007
- Critical Decision-2: Approve Performance Baseline—4Q FY 2007
- Critical Decision-3: Approve Start of Construction—2Q FY 2008
- Critical Decision-4: Approve Start of Operations—4Q FY 2010

[a] Title I and Title II design funding of $2,500,000 is provided under PED project no. 07-SC-0401.

h. Reserve for potential capability replacement and renovations, Pacific Northwest National Laboratory (PNNL):

(dollars in thousands)

	FY 2006	FY 2007	FY 2008
Reserve	—	—	35,000

FY 2008 funding includes $35,000,000 held in reserve pending resolution of issues related to capability replacement and renovation at PNNL. If the issues are resolved, DOE will initiate a reprogramming request to use these funds for replacing and/or upgrading mission-critical facilities currently located in the Hanford Site 300 Area.

5. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
Prior Years	5,069	5,069	3,450
FY 2006	—	—	2,619
FY 2007	8,908	8,908	5,500
FY 2008	—	—	2,408
Total, Design	13,977	13,977	13,977
Construction			
Prior Years	23,581	23,081	19,153
FY 2006	14,720[a]	15,240[ab]	16,291
FY 2007	19,033	19,033	25,430
FY 2008	63,529[c]	63,529	37,325
FY 2009	16,300	16,300	31,495
FY 2010	3,000	3,000	6,505
FY 2011	—	—	3,984
Total, Construction	140,163	140,183	140,183
Total	154,140	154,160	154,160

[a] Includes $1,980,000 for the Physical Sciences Facility project.
[b] Includes $520,000 of prior year budget authority unobligated carryover, $20,000 from closed-out subprojects MEL-001-09 and MEL-001-14 which are no longer reflected in this datasheet and $500,000 from subproject MEL-001-36 which had been held in reserve for a reprogramming.
[c] FY 2008 funding includes $35,000,000 held in reserve pending resolution of issues related to capability replacement and renovation at PNNL. If the issues are resolved, the Administration will initiate a reprogramming request to use these funds for replacing and/or upgrading mission-critical facilities currently located in the Hanford Site 300 Area.

6. Details of Project Cost Estimate

See subproject details.

7. Schedule of Project Costs

See subproject details.

8. Related Funding Requirements

See subproject details.

9. Required D&D Information

See subproject details.

10. Acquisition Approach

Construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bids.